Serial No.   :   10/764,962
Applicants   :   Anderson et al.
Page   :   2

LISTING OF CLAIMS:

Please cancel claims 1-69. Please add new claims 70-96.

1.-69. (Cancelled)

70. (New) A conveyor system, comprising:

a plurality of conveyor beds, each said conveyor bed having a conveying surface and at least one motorized roller propelling said conveying surface;

a plurality of motor controllers, at least one of said plurality of motor controllers adapted to control said at least one motorized roller;

at least one sensor, said sensor adapted to detect the presence of an article load on said conveyor bed adjacent to said sensor and to communicate to said associated motor controllers when the article load is detected by said sensor;

a conveyor bed controller in communication with said plurality of motor controllers, said conveyor bed controller adapted to send communications to said motor controllers for controlling said associated motorized rollers;

at least one of said conveyor beds comprising a routing component, said routing component operable for selectively directing articles in different directions from said routing component;

a master controller adapted to send and receive communications from said conveyor bed controllers for controlling said conveyor bed controllers, said motor controllers, and said routing components; and

a network that carries the communications between said master controller, said conveyor bed controller, said motor controllers and said routing components;

wherein said master controller evaluates current operating state of said plurality of conveyor beds and said routing components;

wherein said master controller calculates a route for article loads in said plurality of conveyor beds based upon rules using flow and position of article loads in said plurality of conveyor beds and routing components;

wherein said master controller transmits a speed command based upon said route to said plurality of conveyor bed controllers over said network; and

Serial No.   :   10/764,962
Applicants   :   Anderson et al.
Page   :   3

wherein said conveyor bed controllers send said speed command to said associated motor controllers to operate said associated motorized roller at a speed based on said calculated route.

71. (New) The system of claim 70 wherein:

said master controller transmits a route direction command for article loads to said plurality of conveyor bed controllers over said network;

said plurality of conveyor bed controllers send said route direction command to said associated motor controllers of said motorized rollers; and

said associated motorized rollers control a direction of said conveying surface according to said calculated route.

72. (New) The system of claim 71 wherein:

said master controller tracks article load information of said plurality of conveyors beds and calculates a routing table for said article loads in said plurality of routing components using article destination information, load priority and available routing directions;

said master controller transmits a routing table speed command to a plurality of routing component controllers over said network; and

said routing component controllers sending said routing table speed command setting to a routing component motor controller to operate routing component at the speed based on said calculated routing table.

73. (New) The system of claim 72 wherein:

said master controller transmits a routing table direction command to said plurality of routing component controllers over said network; and

said routing component controllers sends said routing table direction command to said associated routing component motor controllers to control the direction of said routing component direction according to said routing table.

Serial No. : 10/764,962
Applicants : Anderson et al.
Page : 4

74. (New) The system of claim 73 wherein:

said sensors of said routing components identifies an article load destination information;

said master controller evaluates flow and position of said article loads in said plurality of conveyor beds and said routing components to select a routing component route from said routing table; and

said master controller controls the direction of said routing component according to said route.

75. (New) The system of claim 74 wherein said master controller adjusts the speed and the direction of said conveyor beds associated with said routing component route.

76. (New) The system of claim 75 wherein:

said master controller transmits a function command over said network to said plurality of bed controllers and said routing components;

said plurality of bed controllers and said routing components download said function command; and

said master controller dynamically controls the direction and the speed of said plurality of bed controllers and said routing components based upon said function command.

77. (New) The system of claim 76 wherein said function command comprises a slug accumulation function program

78. (New) The system of claim 76 wherein said function command comprises a singulation accumulation function program

79. (New) The system of claim 76 wherein said function command comprises a reverse slug accumulation function program

80. (New) The system of claim 76 further comprising:

a user interface with visualization coupling with said master controller;

Serial No.   :   10/764,962
Applicants   :   Anderson et al.
Page   :   5

wherein said user interface provides a visual display of diagnostic information, flow information and status information in said plurality of conveyor beds and said routing components.

81. (New) The system of claim 80 wherein said user interface controls the speed and the direction of said plurality of bed controllers and said routing components through said master controller.

82. (New) The system of claim 81 wherein said user interface controls said master controller instantaneously.

83. (New) The system of claim 81 wherein said user interface controls said master controller with a delay.

84. (New) A method for dynamically controlling article load flow through a plurality of routes of conveyor beds and routing components with a master controller, the method comprising the steps of:

evaluating the current operating state of the plurality of conveyor beds and the routing components;

detecting presence of article loads in the plurality of conveyor beds with sensors;

calculating routes for article loads in the plurality of conveyor beds, the routes calculated by the master controller from rules using flow and position of article loads in the plurality of conveyor beds and routing components;

transmitting a calculated route speed command from the master controller to a plurality of conveyor bed controllers over a network;

sending the route speed command from the plurality of conveyor bed controllers to an associated motor controller of motorized rollers; and

operating the associated motorized roller at speeds based on the calculated route.

85. (New) The method of claim 84 further comprising:

transmitting a route direction command of article loads from the master controller to the plurality of conveyor bed controllers over the network;

Serial No.   :   10/764,962
Applicants   :   Anderson et al.
Page   :   6

     sending the route direction command from the plurality of conveyor bed controllers to the associated motor controllers of the motorized rollers; and

     controlling the direction of the associated motorized roller according to the calculated route.

86. (New) The method of claim 85 further comprising:

     tracking article load information of the plurality of conveyors beds by the master controller;

     calculating routing tables for article loads in the plurality of routing components, the routing table calculated by the master controller using article destination information, load priority and available routing directions;

     transmitting a routing table speed command from the master controller to a plurality of routing component controllers over the network;

     sending the routing table speed command to routing component motor controllers from the routing component controllers; and

     operating routing component at speed based on the calculated routing table.

87. (New) The method of claim 82 further comprising:

     transmitting routing table direction command from the master controller to the plurality of routing component controllers over the network;

     sending routing table direction command to the routing component motor controller from the routing component controller; and

     controlling routing component direction according to the calculated routing table.

88. (New) The method of claim 87 further comprising:

     identifying an article load destination information with a sensor of the routing component;

     evaluating the flow and position of article loads in the plurality of conveyor beds and routing components by the master controller;

     selecting a routing component route from routing table based on the article load destination information, article load flow and article flow position by the master controller; and

Serial No. : 10/764,962
Applicants : Anderson et al.
Page : 7

directing the article load in a direction associated with the routing component route, the master controller controlling the direction of routing component according to the routing component route.

89. (New) The method of claim 88 further comprising:

adjusting speeds of the conveyor beds associated with the routing component route by the master controller to route the article load.

90. (New) The method of claim 89 further comprising:

transmitting a function command by the master controller over the network to the plurality of bed controllers and routing components;

downloading the function command to the plurality of bed controllers and the routing components; and

controlling the direction and speed based on the function command for the plurality of bed controllers and routing components instantaneously as commanded by the master controller.

91. (New) The method of claim 90 further comprising downloading the function command as a slug accumulation function program to control the plurality of bed controllers and routing components.

92. (New) The method of claim 91 further comprising downloading the function command as a singulation accumulation function program to control the plurality of bed controllers and routing components.

93. (New) The method of claim 91 further comprising downloading the function command as a reverse slug accumulation function program to control the plurality of bed controllers and routing components.

Serial No.   :   10/764,962
Applicants :   Anderson et al.
Page   :   8

94. (New) The method of claim 91 further comprising:

coupling a user interface with visualization to the master controller, the user interface providing a visual display of article flow and status information in the plurality of conveyor beds and routing components;

displaying diagnostic information for the plurality of conveying beds and routing components; and

displaying status information for the plurality of conveying beds and routing components.

95. (New) The method of claim 94 further comprising:

controlling the master controller to control the speed and direction of the plurality of bed controllers and routing components using the user interface with visualization.

96. (New) The method of claim 95 further comprising:

controlling the master controller instantaneously using the user interface with visualization.

97. (New) The method of claim 95 further comprising:

controlling the master controller with a delay using the user interface with visualization.